

CLAIMS

What is claimed is:

- 1 1. A system for phase aligning a first timing signal with a second
2 timing signal, the system comprising:
 - 3 a selection unit coupled to a plurality of timing sources, wherein one
4 time source is being used as a reference to produce the first timing
5 signal and at least one timing source is an internal timing source;
 - 6 a detection means coupled to the selection unit for detecting a failure in
7 the reference timing source of the first timing signal and causing the
8 selection unit to switch to another timing source to continue generating
9 the first timing signal; and
 - 10 a unit coupled to the selection unit for comparing the phase of the first
11 timing signal after switching to the other timing source to the phase of
12 the second timing signal, wherein the unit introduces gradual phase
13 alterations to the second timing signal until the first and second timing
14 signals are in-phase.
- 1 2. The system of claim 1, wherein the detection means comprises:
 - 2 an alarm activity unit coupled to the timing sources for detecting a
3 failure in any one of the timing sources; and
 - 4 a control unit coupled to the alarm unit and the selection unit for
5 determining and instructing the selection unit to switch to another
6 timing source.
- 1 3. The system of claim 1, further comprising an internal timing unit
2 coupled to the selection unit for providing the internal timing source.
- 1 4. The system of claim 1, wherein the unit comprises:
 - 2 a phase detection unit coupled to the selection unit for comparing the
3 phase of the first timing signal to the phase of the second timing signal;

4 a phase adjuster unit coupled to the phase detection unit for providing
5 a feedback timing signal that indicates a gradual phase shift of the
6 second timing signal to the phase detection unit and continues the
7 gradual phase shift as long as the first timing signal and the second
8 timing signal are detected as being out of phase by the phase detection
9 unit;

10 a low pass filter coupled to the phase detection unit for filtering the
11 output timing signal from the phase detector unit; and

12 an oscillator coupled to the low pass filter and the phase adjuster unit
13 for providing the feedback timing signal.

1 5. A method for phase aligning a timing signal with a second timing
2 signal, the system comprising:

3 switching to a timing source to provide the time signal when a failure is
4 detected in an existing timing source;

5 comparing the phase of the timing signal to the second timing signal to
6 determine the relative phase of the timing signal to the second timing
7 signal;

8 gradually phase shifting the second timing signal until the first timing
9 signal and the second timing signal are in-phase by introducing
10 incremental phase changes to the second timing signal over a plurality
11 of cycles.